

REMARKS**OBJECTION TO THE TITLE**

In the Office Action, at page 2, numbered paragraphs 1-2, the title was objected to as not being indicative of the invention to which the claims are directed. In view of the proposed amended title set forth above, the outstanding objection to the title should be resolved.

OBJECTIONS TO THE DRAWINGS AND SPECIFICATION

In the Office Action, at page 2, numbered paragraphs 3-4, the drawings were objected to.

The specification has been amended (see above) to insert the reference characters 25, 27, and 29. No new matter has been added. Thus, FIGs. 7-11 are now submitted to be in form for allowance.

Corrections to FIGs. 1-3 by addition of the terminology "PRIOR ART" have been requested and replacement figures have been submitted herewith. Therefore, the outstanding drawing objections should be resolved.

Reconsideration and withdrawal of the outstanding objections to the drawings are respectfully requested.

CHANGES TO THE SPECIFICATION

The specification has been reviewed in response to this Office Action. Changes have been made to the specification only to place it in preferred and better U.S. form for issuance and to resolve the Examiner's objections raised in the Office Action. That is, as noted above, the reference numerals 25, 27, and 29 have been inserted into the specification for clarification. No new matter has been added.

REJECTION UNDER 35 U.S.C. §102

In the Office Action, at pages 2-6, numbered paragraphs 5-33, claims 1-26 were rejected under 35 U.S.C. §102(e) as being anticipated by Isohala et al. (USPN 6,288,489). This rejection is traversed and reconsideration is requested.

It is respectfully submitted that a novelty of the present invention comprises a particular configuration of the frame and/or adhesive that facilitates affixing the adhesive tapes. According to one potential application, the frame can be successfully fixed to the plasma display apparatus at a low cost, is disclosed. In one embodiment, the plasma display apparatus comprises a

plasma display panel, circuit substrates having drive circuits to drive the plasma display panel, a main frame to mount the circuit substrates, and adhesive tapes to fix the plasma display panel to the main frame, and small holes are provided on the portion to which the adhesive tapes of the main frame are fixed so that they are arranged regularly at established intervals. When the adhesive tapes and the main frame are fixed, no air bubbles form between the adhesive tapes and the main frame because plural small holes are provided on the portion to which the adhesive tapes of the main frames are fixed.

In independent claim 1, the main frame comprises plural small holes provided where the adhesive tapes are fixed. In independent claim 13, the main frame comprises plural small recesses on the portion, to which the adhesive tapes are fixed, of the surface to which the adhesive tapes are fixed. In independent claim 23, the adhesive tapes comprise plural small holes. In independent claim 25, the adhesive tapes comprise plural small recesses on at least one of the surface in contact with the plasma display panel or that in contact with the main frame.

It is respectfully submitted that, with respect to claim 2 of the present invention, the Examiner's comment that "Figure 6A of Isohata shows the plural small holes arranged at regular intervals" is not quite correct. Lines 23-26 of col. 4 recite: "FIG. 6A is an oblique view showing a structure for coupling a PDP with a uniform heat-conducting plate and a main frame according to one embodiment of the present invention." The sockets 6 of FIG. 6A are formed on the plate 18 so as to receive the respective tabs 5 (see col. 8, lines 54-59).

Further, lines 45-59 of col. 8 of Isohata recite:

FIG. 6A is an exploded view, in an oblique direction, of the structure for coupling the main frame and the uniform heat-conducting plate. As mentioned above, the uniform heat-conducting plate 18 may be discarded with PDP 10, and therefore, it cannot have a complicated structure which may increase the cost. However, the embodiment shown in FIG. 4 forms the "complicated structure" on the main frame 17, which support the relatively low cost plate 18, so as to realize the above mentioned various functions.

The main frame 17 of this embodiment has a plurality of tabs 5 (for example, 11, in FIG. 6) which combines main frame 17 with the plate 18. On the other hand, a plurality of sockets 6 are formed on the plate 18 so as to receive the respective tabs 5 formed on the main frame 17. There is also provided a screw hole 7 in each of the tabs 5 and sockets 6.

Hence, FIG 6A of Isohata also fails to show the plural small recesses arranged regularly at established intervals (claim 4 of the present invention), the main frame comprising plural small recesses provided on the surface opposite to the one to which the adhesive tapes are fixed (claim 5 of the present invention), the plural small recesses, provided on the surface

opposite to one to which the adhesive tapes are fixed, arranged at established intervals (claim 6 of the present invention), the main frame comprising plural small projections on the surface opposite to one to which the adhesive tapes are fixed (claim 7 of the present invention), the plural small projections arranged at established intervals (claim 8 of the present invention), the adhesive tapes comprising plural small holes (claim 9 of the present invention), or the plural small holes arranged at established intervals (claim 10 of the present invention).

Please note that the small holes (7) indicated by the Examiner are holes through which screws pass.

Similarly, FIG. 6A of Isohata fails to show claims 14, 15, 16, 17, 18, 19 and 20 of the present invention.

It should be noted that FIG. 7A of Isohata does not disclose the plural small recesses on the portion, to which the adhesive tapes are fixed, of the surface to which the adhesive tapes are fixed. With respect to FIG. 7A of Isohata, lines 19-61 of col. 9 recite:

FIG. 7A is an oblique view showing the structure after the main frame 17 has been fixed to PDP 10 through plate 18. On the other hand, FIG. 7B shows the enlarged structure of the circled part shown in FIG. 7A. In FIG. 7B, reference numeral 31 denotes the secured part where a tab 5 is inserted into a socket 6 and fixed each other by a screw 19. In this embodiment, the total of eleven secured parts 31 are provided on the frame structure such that four of them are on the respective corners, four are on each center of four edges and the remaining three are disposed at equal distances between the secured parts provided on each center of the short edges.

Reference numerals 32 and 33 denote ribs, 34 denotes a radiating fin and 35, 35 . . . denote through holes i.e., open interior spaces in the frame. Rib 32 is formed along the edges of main frame 17 so as to increase the strength of the main frame 17. Due to the rib 32, main frame 17 can be made as thin as possible except the rib part, thus reducing the weight of the main frame 17 without reducing its mechanical strength. Through holes 35 are formed to penetrate the main frame 17, thus further reducing the weight of the main frame 17. Ribs 33 are formed to the main frame 17 along the respective peripheries of the through holes 35 so as to compensate for the decrease in mechanical strength of the main frame 17 due to the formation of the through holes 35.

Radiating fin 34 is provided to effectively move the heat generated by PDP 10 from the main frame 17 to the outside of the device through heat radiation and heat conduction. In this

embodiment, eight fins are provided on the main frame 17. In addition to these fins 34, the above mentioned ribs 32 and 33 also work as heat dissipating parts.

In this embodiment, the main frame 17 can have the above mentioned complicated structure having ribs and fins because the uniform heat-conducting plate 18, which may be discarded is provided separately in addition to the main frame. In such a structure, when a necessity arises to change PDP 10 for some reason, since main frame 17 can easily be separated from the uniform heat-conducting plate 18, only PDP 10 and the low cost plate 18 must be replaced.

The main frame 17 having the above mentioned structure can be manufactured by a precut method from an aluminum plate. However, for mass production, an aluminum die casting is preferable.

Similarly, FIG 5 of Isohata is described in line 41 of col. 7 through line 44 of col. 8:

FIGS. 5A to 5C are cross sectional views showing a part of the structure of respective plates 18 according to first to third embodiments of the present invention. These figures show the enlarged structures of the circled part shown in FIG. 4.

FIG. 5A shows a very simple structure in which a rolled aluminum plate 18a is affixed to PDP 10 with an adhesive 1a. Although a uniform layer of adhesive 1a is provided in the structure shown in FIG. 5A, the present invention makes it possible to place a double coated adhesive tape between the plate 18a and PDP 10.

In a case where the adhesive layer is formed on the entire surface of plate 18a, this may result in a cost increase. FIG. 5B shows another example of a plate in which adhesive layers are partly formed between the plate 18b and PDP 10. As shown, plate 18b is comprised of a plurality of stripe-like convex parts 181 and concave parts 182 which are alternately and periodically formed on the plate 18b. This plate 18b contacts with PDP 10 through the convex parts 181. On the other hand, in the concave parts 182, adhesive layers 1b are formed between the plate 18b and PDP 10 so as to affix them together. The adhesive material must have an excellent thermal resistance and thermal conduction, and therefore, a double coated adhesive tape, "VHB™ Acrylic Form Structural Adhesive Tape" made by 3M Co. is used in this embodiment. In the structure shown in FIG. 5B, the double coated adhesive tape is periodically placed so that the tape cost is reduced as compared with the case where the adhesive tape is placed on the entire surface of PDP 10 as shown in FIG. 5A. The convex parts 181 where no adhesive tape is placed may be processed to contact with PDP 10 so as not to form a gap between plate 18b and PDP 10. Ideally, the convex parts 181 are expected to completely contact with PDP 10, however, a small gap depending on the

processing accuracy may exist.

Plate 18b may be realized by processing a rolled aluminum plate in a drawing or a press working. In addition, the periodically formed convex and concave parts improve the mechanical strength of the plate 18b. The embodiment shown in FIG. 4 uses plate 18b as the uniform heat-conducting plate 18. From this figure, it is clearly understood that a plurality of convex and concave parts are formed in a stripe form.

Although the present embodiment forms the convex and concave parts in a stripe form periodically, these parts need not always be formed in a stripe form. For example, they may be formed in a lattice form or even more randomly. The form may be changed freely depending on design requirements.

FIG. 5C shows still another example of the uniform heat-conducting plate 18. Reference numeral 18c denotes the uniform heat-conducting plate of this example, the plate 18c which has the same effect as that of the plate 18b shown in FIG. 5A without conducting the drawing or the press working mentioned above. In this example, therefore, spacers 3 are disposed in places corresponding to the convex parts 181 of the plate 18b, that is, between the adhesives 1c. As a result, this example can easily realize a low cost plate because the above mentioned drawing or the press working method is no longer necessary.

In this example, spacers 3 are not limited to the stripe form shown, but any form including square and lattice forms may be applicable.

In the above mentioned three examples of plate 18, the heat generated by the PDP 10 is uniformly conducted to the respective plate 18a, 18b or 18c so that no hot spot is formed on the plate 18. Then the heat is quickly discharged to the outside of the device through the main frame 17 which is attached to the plate 18a, 18b or 18c.

Hence, FIG. 5 fails to show the adhesive tapes comprising plural small recesses on the surface in contact with the plasma display panel (claim 11 of the present invention), the plural small recesses on the adhesive tapes arranged regularly at established intervals (claim 12 of the present invention). Similarly, FIG. 5 fails to show claim 21, claim 22, or claim 26 of the present invention.

In addition, the various combinations suggested by the Examiner for claims 13, 23, and 25 are also submitted not to be shown in Isohata.

Thus, it is respectfully submitted that the configuration of the frame and/or adhesive that facilitates affixing the adhesive tapes is not set forth in USPN 6,288,489. Thus, it is submitted that independent claims 1, 13, 23 and 25 are not anticipated by Isohala et al. (USPN 6,288,489) under 35 U.S.C. §102(e). Dependent claims 2-12, 14-22, 24 and 26, which depend from independent claims 1, 13, 23 and 25, respectively, are submitted to be not anticipated by Isohala et al. (USPN 6,288,489) under 35 U.S.C. §102(e) for at least the reasons that independent claims 1, 13, 23 and 25 are submitted not to be anticipated by Isohala et al. (USPN 6,288,489) under 35 U.S.C. §102(e).

CONCLUSION

In accordance with the foregoing, the title has been amended, FIGs. 1-3 have been amended and the specification has been amended. The claims have not been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-26 are pending and under consideration. Reconsideration is respectfully requested.

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: April 14, 2004

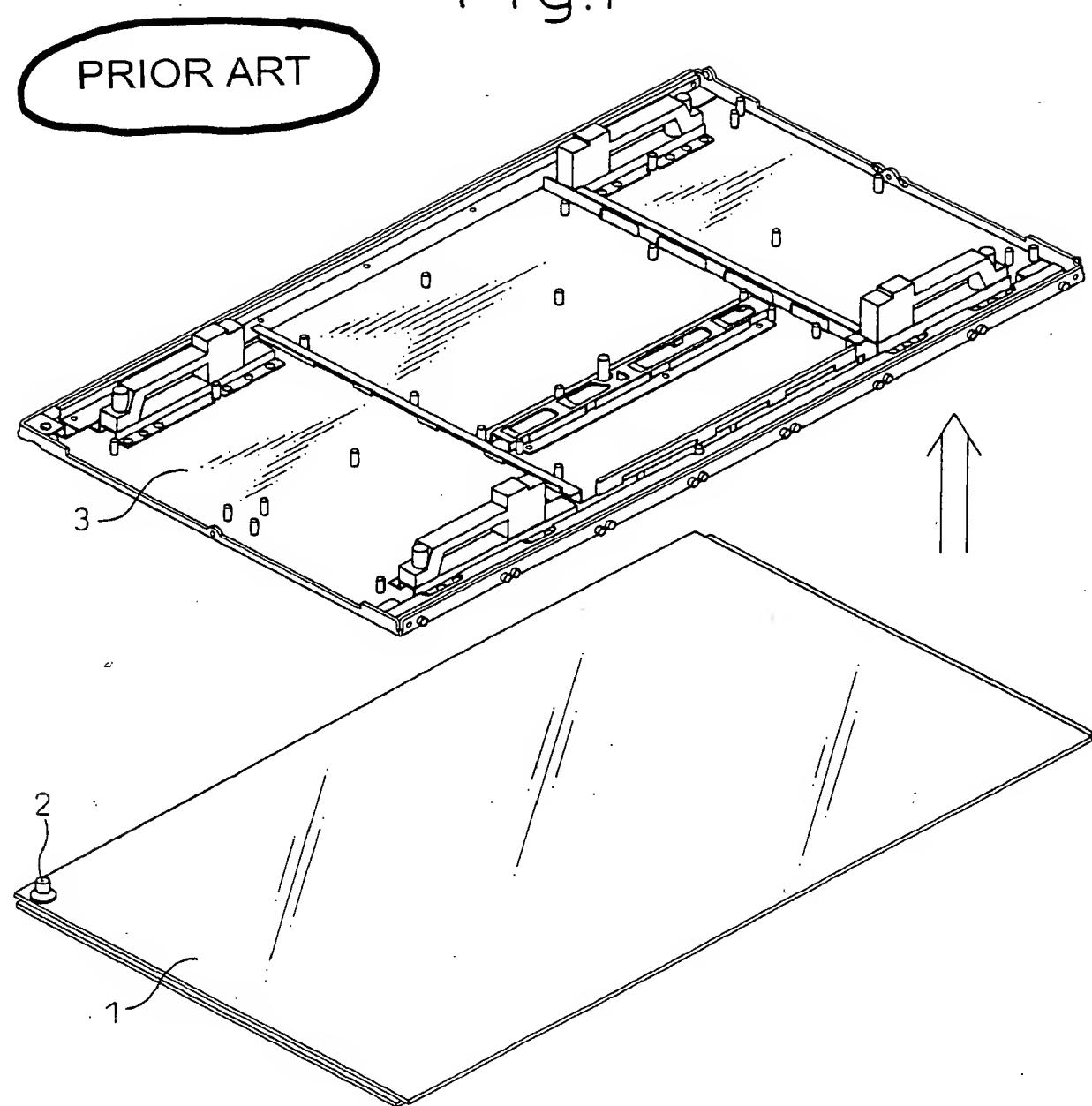
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Fig.1





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Fig.2

PRIOR ART

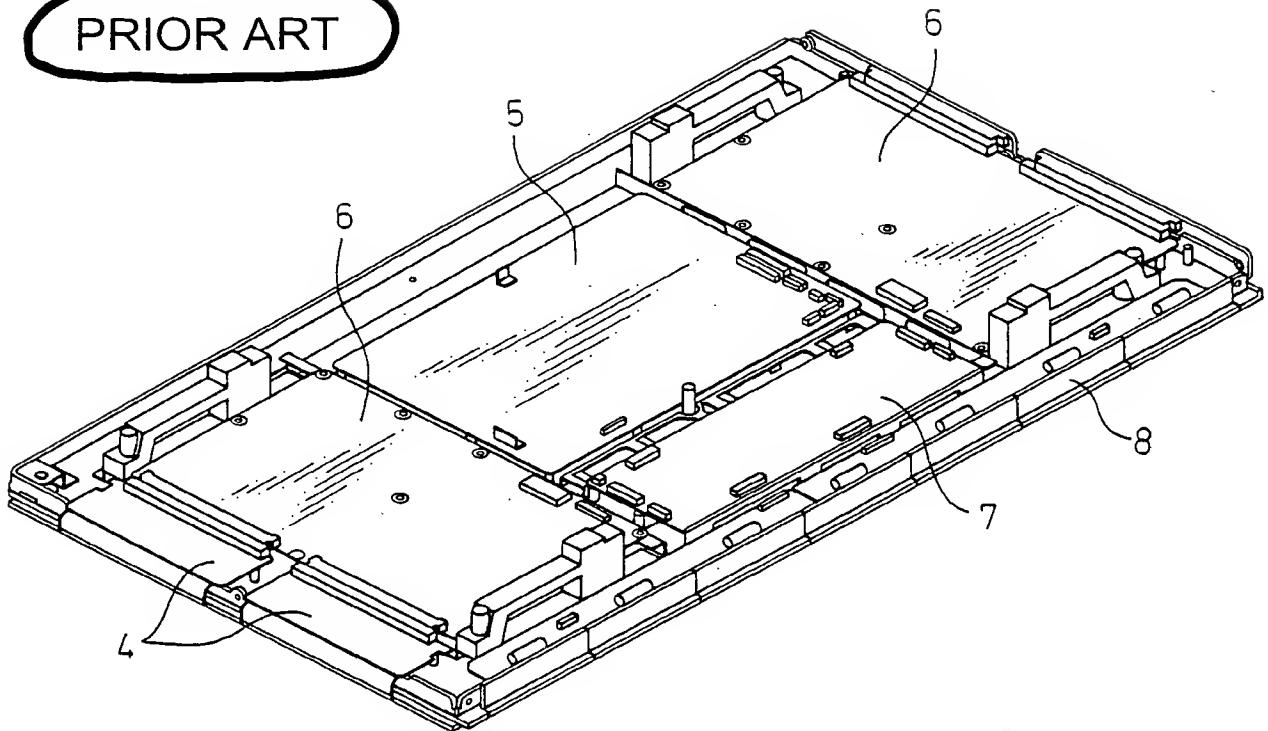


Fig.3

PRIOR ART

